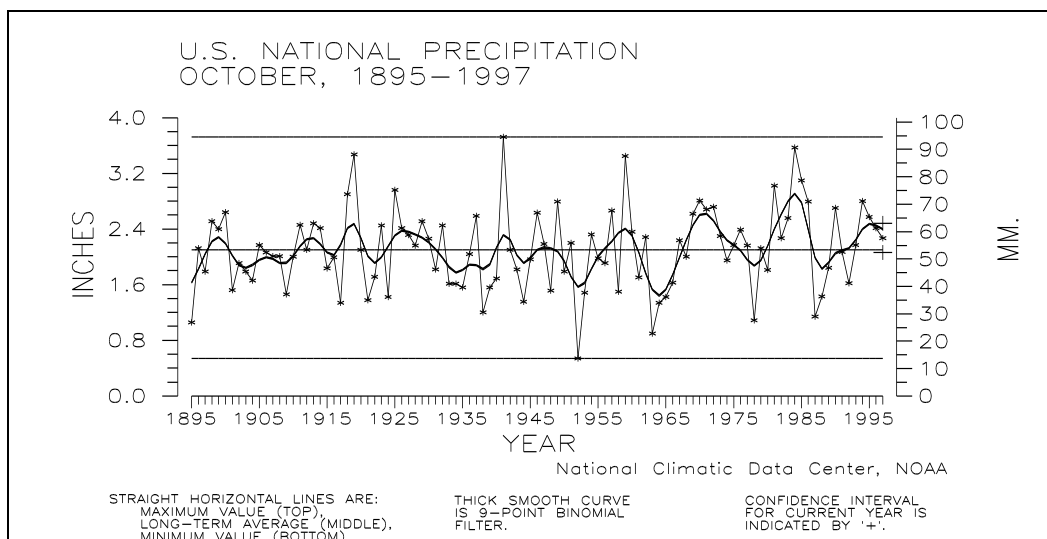
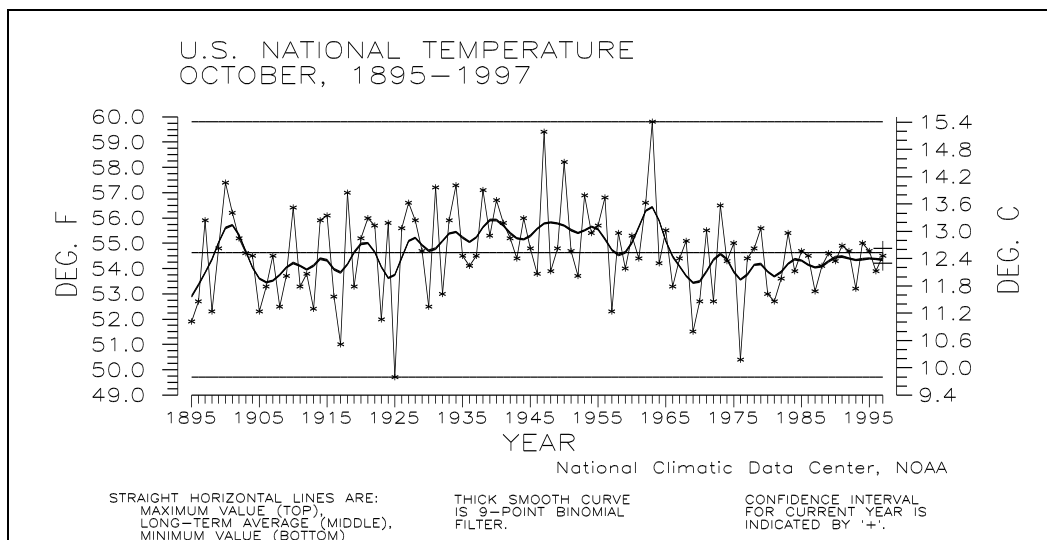


CLIMATE VARIATIONS BULLETIN



This CLIMATE VARIATIONS BULLETIN (CVB) is a preliminary report that puts current monthly climate anomalies into historical perspective using climate databases archived at the National Climatic Data Center (NCDC). It is issued on a monthly basis. Supplemental sections are included which address seasonal and annual perspectives, when appropriate.

Current data are based on preliminary reports from River Forecast Center stations and First and Second Order airport stations obtained from the National Weather Service (NWS) Climate Prediction Center (formerly, Climate Analysis Center), and preliminary tornado statistics obtained from the NWS National Severe Storms Forecast Center. THE CURRENT DATA SHOULD BE USED WITH CAUTION. These preliminary data are useful for estimating how current anomalies compare to the historical record, however the actual values and rankings for the current year will change as the final data arrive at NCDC and are processed.

The following NCDC datasets are used for the historical data: the climate division drought database (TD-9640), the hurricane datasets (TD-9636 and TD-9697), the tornado dataset (STORM DATA), and the monthly station dataset (LCD supplemental files). It should be noted that the climate division drought database consists of monthly data for 344 climate divisions in the contiguous United States. These divisional values are calculated from the 6000+ station Cooperative Observer network.

If you have access to the Internet, copies of the CVB are available via both the NCDC's World Wide Web (WWW) server and the NCDC's anonymous FTP server.

NCDC's WWW server

URL for the CVB: <http://www.ncdc.noaa.gov/ol/documentlibrary/cvb.html>

NCDC's anonymous FTP server

Machine: <ftp.ncdc.noaa.gov>

Directory: [/pub/data/cvb](ftp://ftp.ncdc.noaa.gov/pub/data/cvb)

If you are a climate researcher and would like to order copies of the historical datasets used to make graphs of the type in this report, call 704-271-4994 or fax a letter to 704-271-4876 or mail a letter to the address given below, ATTN: Research User Services.

All other questions or requests for data should be made by calling 704-271-4800 or sending a fax to 704-271-4876 or by writing to:

National Climatic Data Center, NOAA
Federal Building
151 Patton Avenue, Room 120
Asheville, NC 28801-5001

If you use any of the information from this CVB, please identify "National Climatic Data Center, NOAA" as the source.

UNITED STATES OCTOBER CLIMATE IN HISTORICAL PERSPECTIVE

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****Notice: The December/Annual 1997 issue of the *Climate Variations Bulletin* will be the last paper copy issue mailed. Expect mailing around January 20, 1998. The CVB will continue to be available at our website.**

TABLE 1. PRECIPITATION AND TEMPERATURE RANKS, BASED
ON THE PERIOD 1895-1997. 1 = DRIEST/COLDEST,
103 = WETTEST/WARMEST FOR OCTOBER 1997,
103 = WETTEST/WARMEST FOR SEP-OCT 1997,
103 = WETTEST/WARMEST FOR MAY-OCT 1997,
102 = WETTEST/WARMEST FOR NOV 1996-OCT 1997.

REGION	OCT 1997	SEP-OCT 1997	MAY-OCT 1997	NOV 1996- OCT 1997
-----	----	-----	-----	-----
PRECIPITATION:				
NORTHEAST	8	12	7	26
EAST NORTH CENTRAL	54	34	22	37
CENTRAL	36	19	15	42
SOUTHEAST	84	74	35	48
WEST NORTH CENTRAL	81	61	60	81
SOUTH	71	49	35	80
SOUTHWEST	35	72	40	59
NORTHWEST	93	97	101	102
WEST	62	86	87	81
NATIONAL	64	50	27	83
TEMPERATURE:				
NORTHEAST	32	27	13	45
EAST NORTH CENTRAL	67	76	34	21
CENTRAL	46	43	9	17
SOUTHEAST	42	41	8	39
WEST NORTH CENTRAL	62	92	86	32
SOUTH	42	66	23	34
SOUTHWEST	36	66	76	86
NORTHWEST	43	78	92	88
WEST	53	80	99	97
NATIONAL	44	77	52	49

TABLE 2. EXTREMES, 1961-90 NORMALS, AND 1997 VALUES FOR OCTOBER. IT SHOULD BE NOTED THAT THE 1997 VALUES WILL CHANGE WHEN THE FINAL DATA ARE PROCESSED.

REGION	PRECIPITATION (INCHES)				NORMAL PCPN	1997 PCPN
	DRIEST VALUE	YEAR	WETTEST VALUE	YEAR		
NORTHEAST	.44	1924	6.96	1995	3.35	1.69
EAST NORTH CENTRAL	.25	1952	4.66	1984	2.47	2.29
CENTRAL	.53	1963	7.15	1919	3.04	2.26
SOUTHEAST	.53	1963	7.33	1959	3.16	4.42
WEST NORTH CENTRAL	.13	1952	2.72	1946	1.09	1.39
SOUTH	.12	1952	7.07	1984	2.89	3.19
SOUTHWEST	.02	1952	3.67	1972	1.12	.80
NORTHWEST	.14	1987	5.20	1950	2.05	3.47
WEST	.01	1917	2.86	1962	1.01	1.09
NATIONAL	.54	1952	3.72	1941	2.16	2.27*

* PRELIMINARY VALUE, CONFIDENCE
INTERVAL + OR - .21 INCHES

REGION	TEMPERATURE (DEGREES F)				NORMAL TEMP	1997 TEMP
	COLDEST VALUE	YEAR	WARMEST VALUE	YEAR		
NORTHEAST	42.7	1925	56.0	1947	48.9	48.4
EAST NORTH CENTRAL	37.5	1925	57.6	1963	47.8	49.0
CENTRAL	48.2	1917	62.9	1947	55.2	55.6
SOUTHEAST	58.2	1987	72.8	1919	63.4	63.4
WEST NORTH CENTRAL	35.5	1925	53.9	1963	45.9	46.9
SOUTH	56.7	1976	69.9	1947	63.4	63.5
SOUTHWEST	48.6	1984	59.4	1950	53.4	52.7
NORTHWEST	42.3	1919	53.9	1988	47.7	47.5
WEST	51.8	1916	62.1	1988	56.9	56.8
NATIONAL	49.7	1925	59.8	1963	54.4	54.5*

* PRELIMINARY VALUE, CONFIDENCE
INTERVAL + OR - .3 DEG. F.

TABLE 3.

STATISTICS FOR SELECTED RIVER BASINS: PRECIPITATION RANKING FOR OCTOBER 1997, WHERE RANK OF 1 = DRIEST, 103 = WETTEST, BASED ON THE PERIOD 1895 TO 1997, AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) DROUGHT, AND AREAL PERCENT OF THE BASIN EXPERIENCING SEVERE OR EXTREME LONG-TERM (PALMER) WET CONDITIONS, AS OF OCTOBER 1997. RIVER BASIN REGIONS AS DEFINED BY THE U.S. WATER RESOURCES COUNCIL.

RIVER BASIN -----	PRECIPITATION RANK -----	% AREA DRY -----	% AREA WET -----
MISSOURI BASIN	85	1.8%	25.6%
PACIFIC NORTHWEST BASIN	90	.0%	54.4%
CALIFORNIA RIVER BASIN	73	6.7%	13.6%
GREAT BASIN	30	.0%	.0%
UPPER COLORADO BASIN	22	.0%	6.6%
LOWER COLORADO BASIN	51	43.9%	.0%
RIO GRANDE BASIN	48	.0%	.0%
ARKANSAS-WHITE-RED BASIN	61	.0%	16.2%
TEXAS GULF COAST BASIN	69	.0%	.0%
SOURIS-RED-RAINY BASIN	69	.0%	8.5%
UPPER MISSISSIPPI BASIN	60	.0%	.0%
LOWER MISSISSIPPI BASIN	68	.0%	16.2%
GREAT LAKES BASIN	15	.0%	.0%
OHIO RIVER BASIN	18	4.6%	.0%
TENNESSEE RIVER BASIN	78	.0%	.0%
NEW ENGLAND BASIN	8	29.4%	7.7%
MID-ATLANTIC BASIN	26	8.5%	.0%
SOUTH ATLANTIC-GULF BASIN	90	.0%	3.3%

U.S. NATIONAL TEMPERATURE OCTOBER, 1895-1997

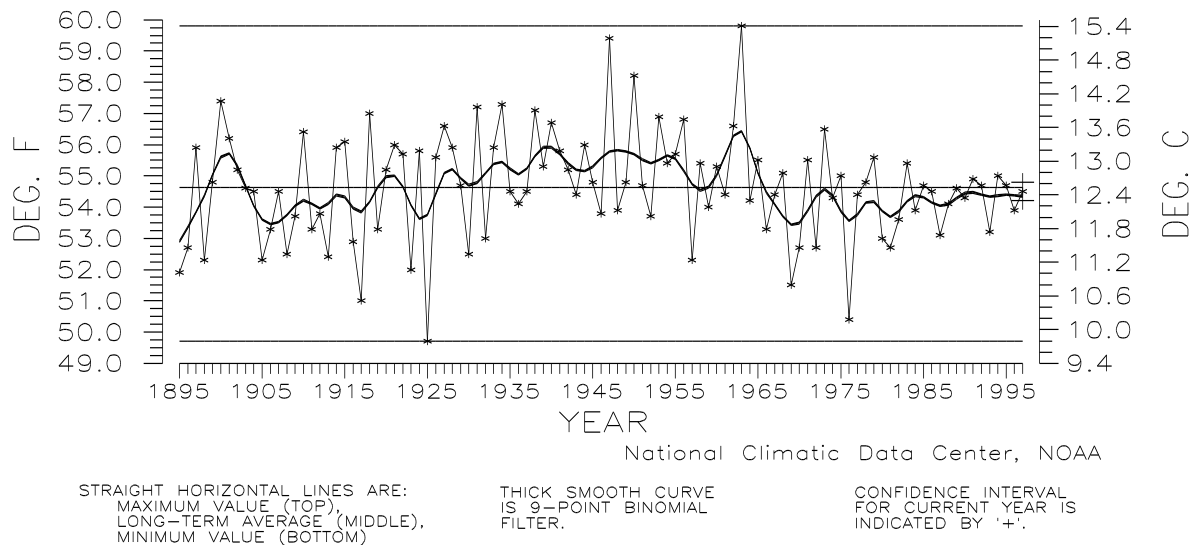


Figure 1: Preliminary data for October 1997 indicate that temperature averaged across the contiguous United States was below the long-term mean ranking as the 44th coolest October since 1895. None of the country was much warmer or much cooler than normal.

U.S. NATIONAL PRECIPITATION OCTOBER, 1895-1997

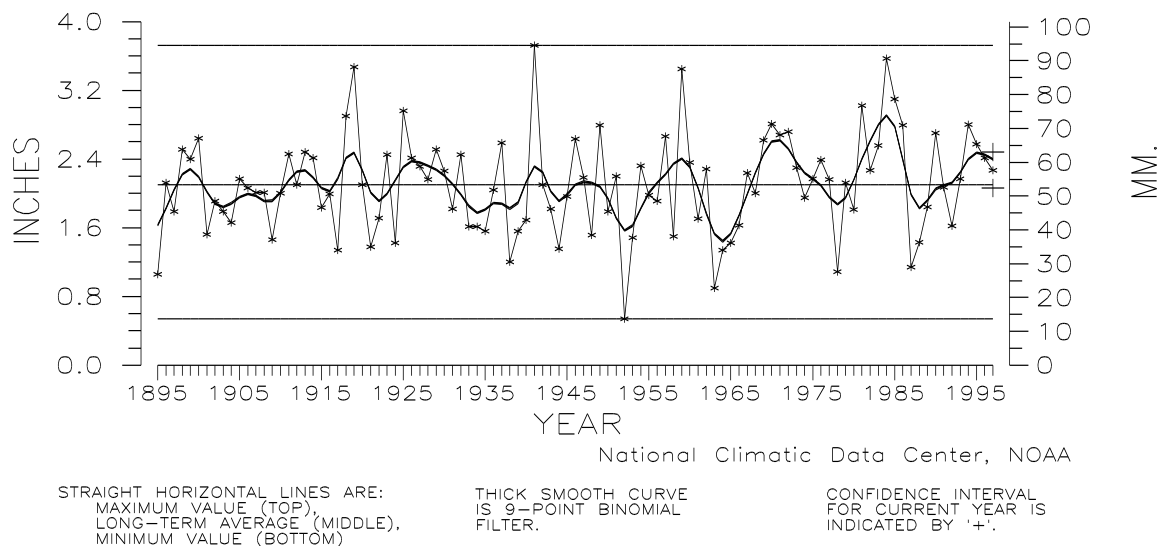


Figure 2: Preliminary precipitation data indicate that October 1997 was the 40th wettest such month since 1895. Over seven percent of the country experienced much wetter than normal conditions while about four percent of the country was much drier than normal.

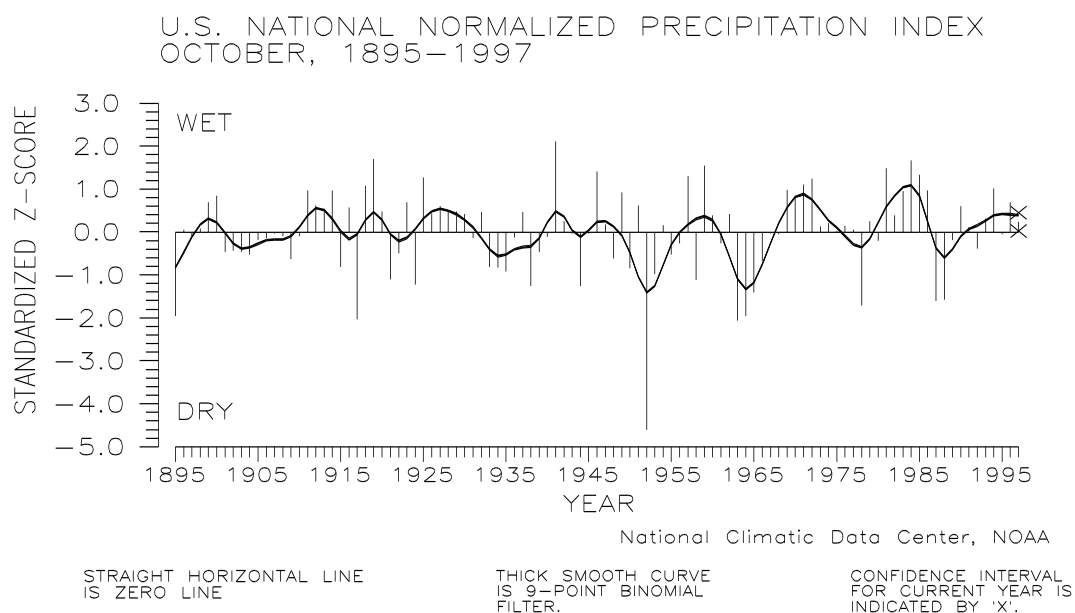


Figure 3: The preliminary national standardized precipitation index ranked October 1997 as the 44th wettest such month on record. This standardized z-score is estimated to be accurate to within 0.151 index units and its confidence interval is shown as an 'X'.

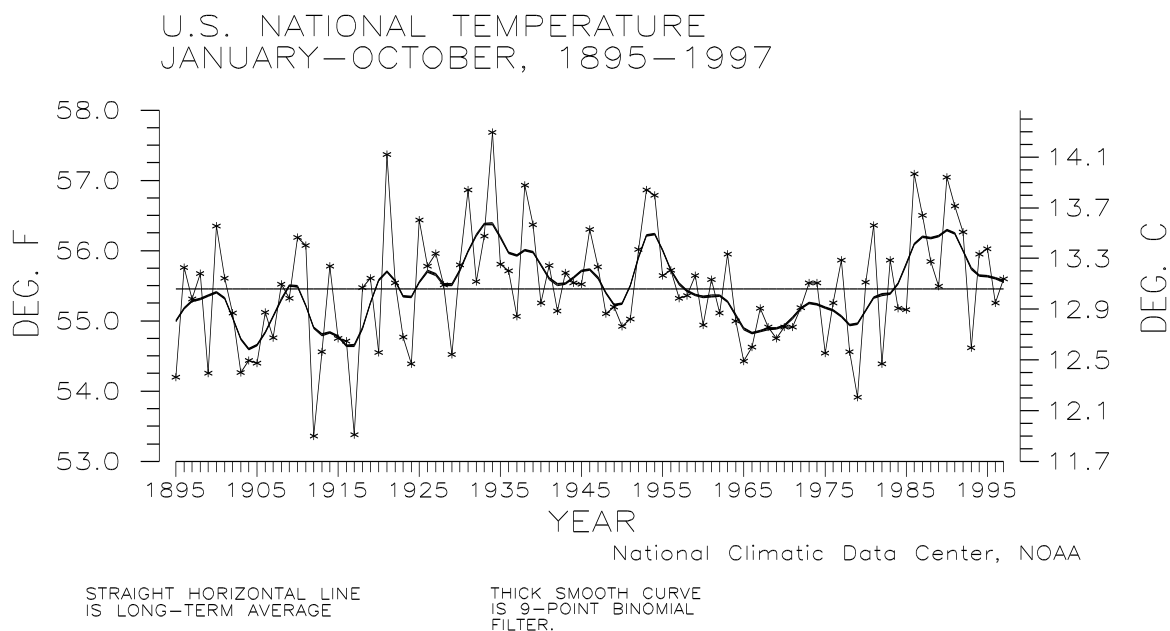


Figure 4: Based upon preliminary data, January–October 1997 was the 43rd warmest such period on record. Nearly ten percent of the country had much warmer than normal January–October temperatures while about five percent of the country was much cooler than normal.

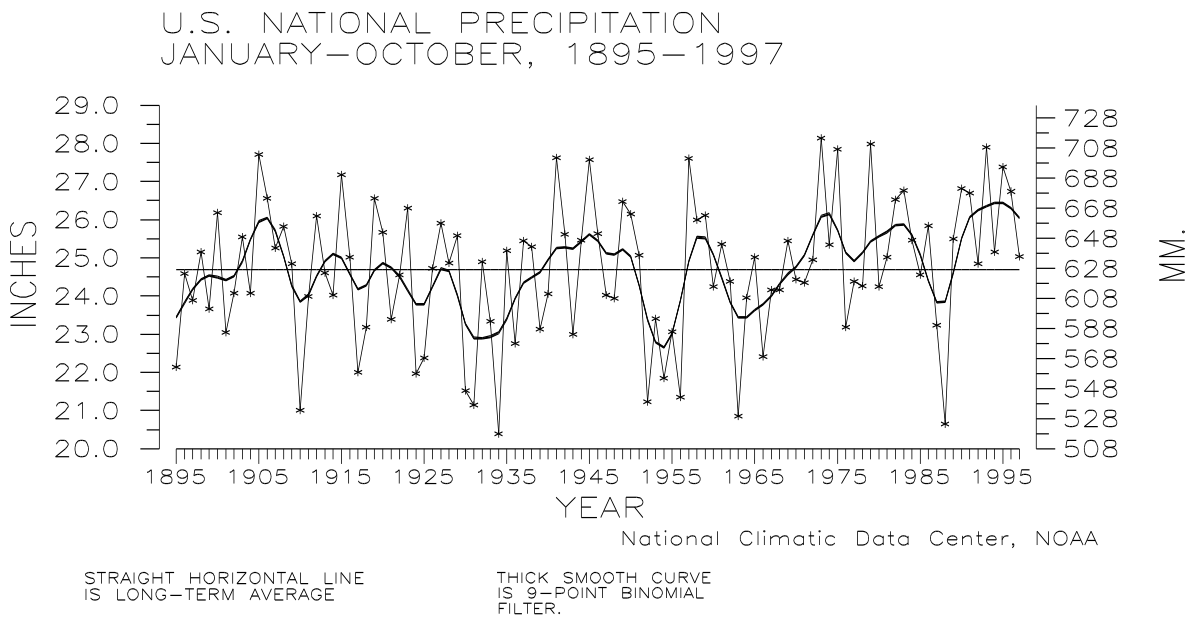


Figure 5: Preliminary precipitation data indicate that the year-to-date, January-October 1997, was the 46th wettest such ten-month period since records began. About 11% of the country was much wetter than normal while nearly five percent of the country was much drier than normal.

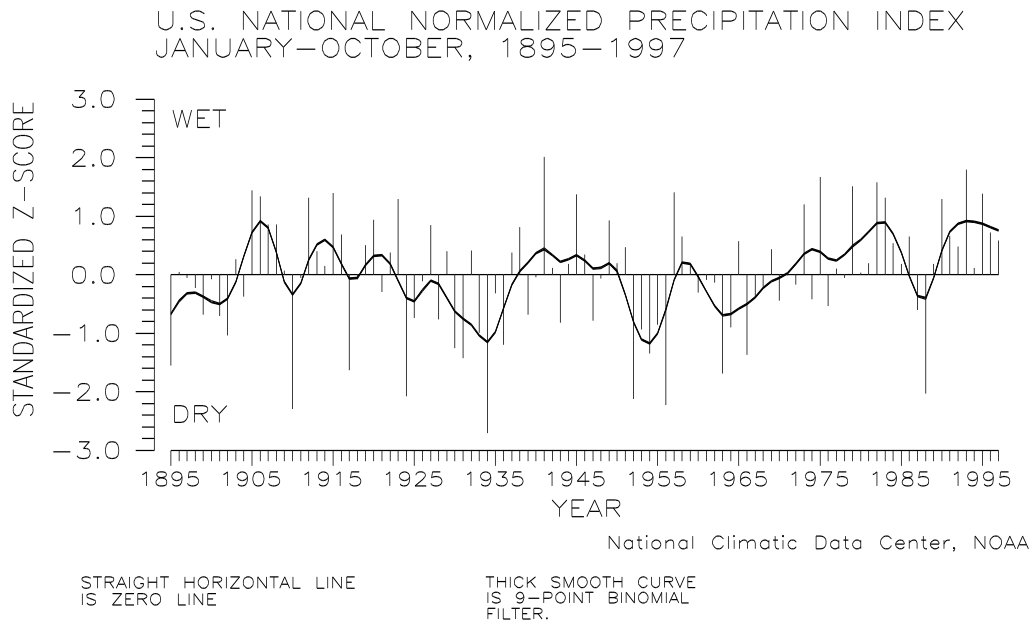
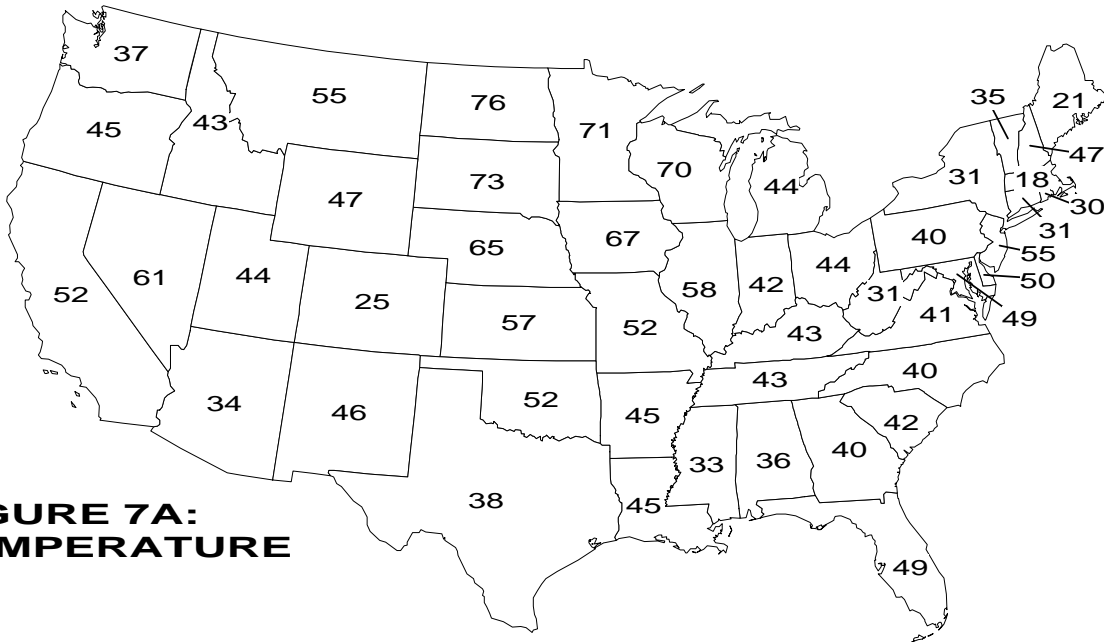
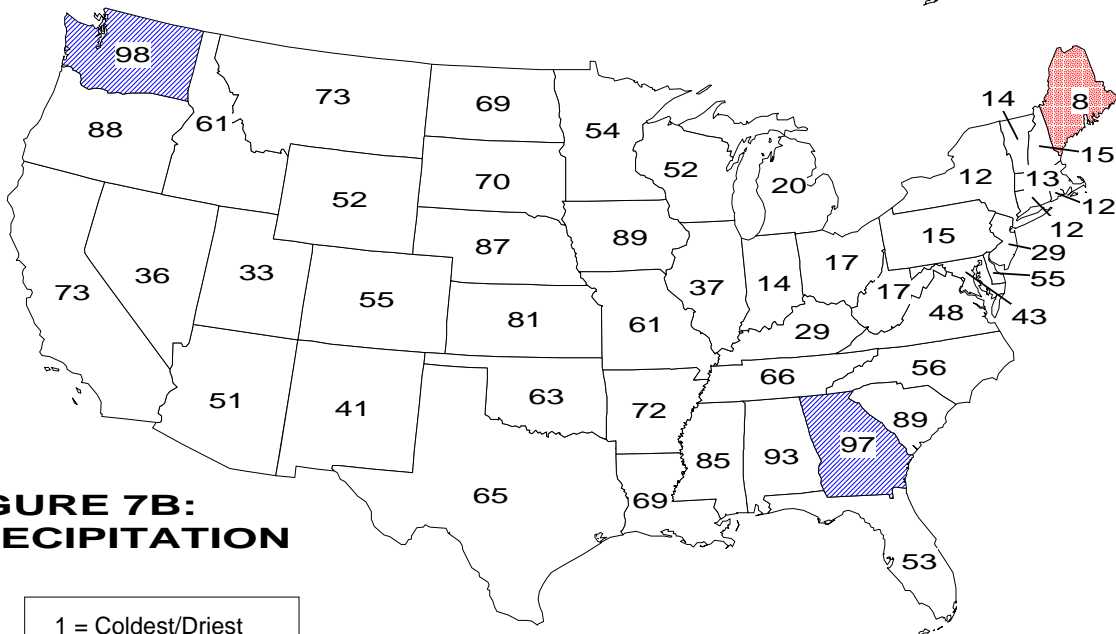


Figure 6: The preliminary national year-to-date standardized precipitation index ranked January-October 1997 as the 28th wettest such period since 1895.

OCTOBER 1997 STATEWIDE RANKS



**FIGURE 7A:
TEMPERATURE**



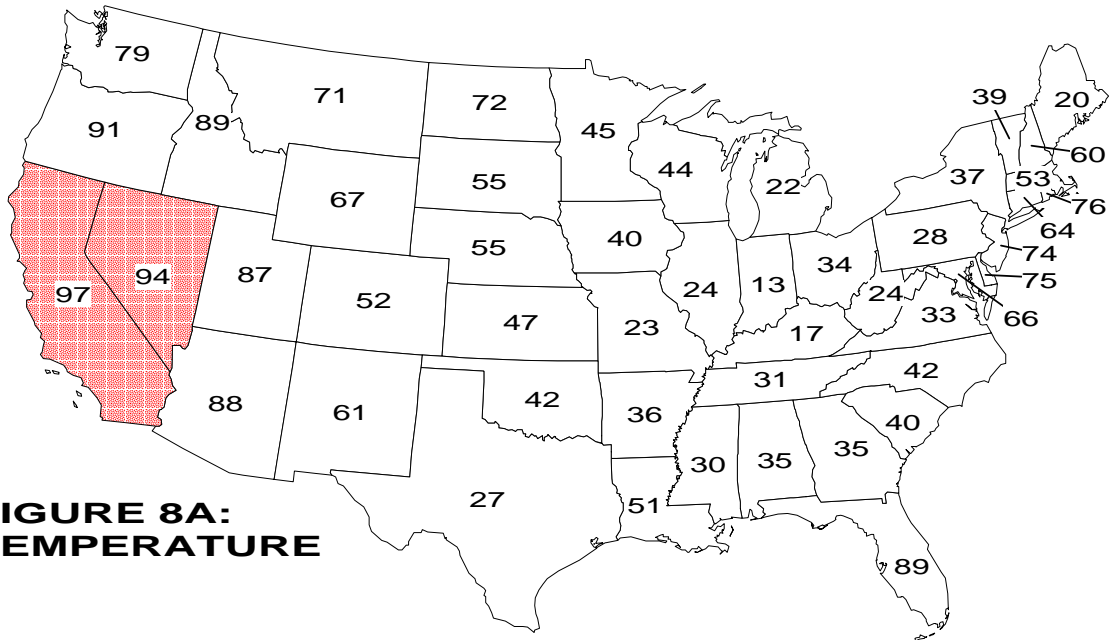
**FIGURE 7B:
PRECIPITATION**

1 = Coldest/Driest
103 = Warmest/Wettest

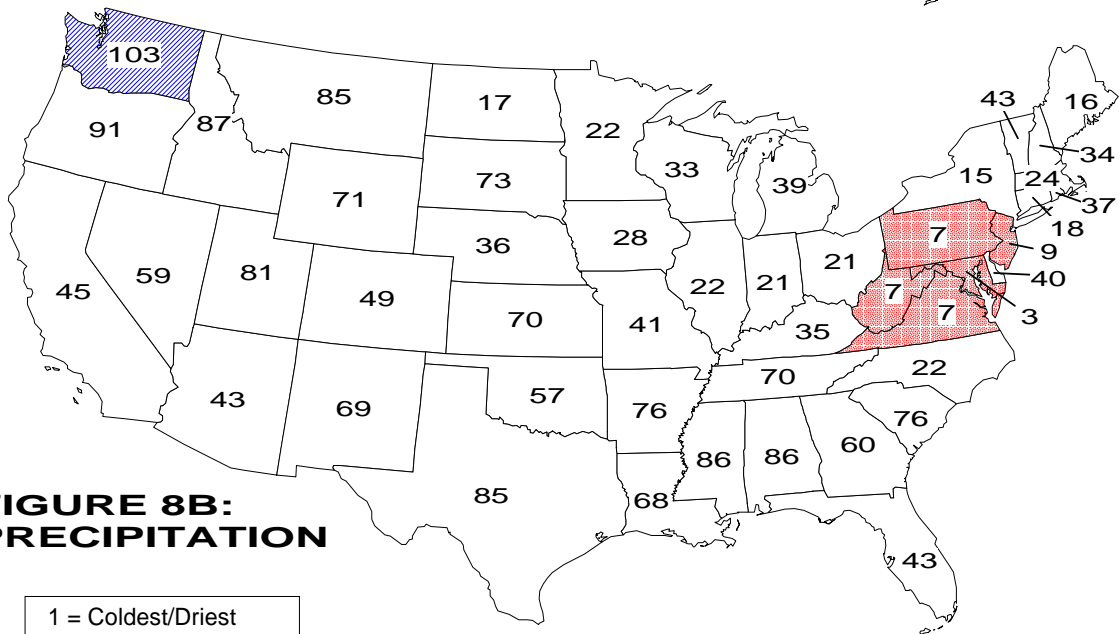
National Climatic Data Center, NOAA

Temperature and Precipitation Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1997. States having a rank of top ten coldest or driest (rank 1-10) or top ten warmest or wettest (rank 94-103) are shaded.

JAN-OCT 1997 STATEWIDE RANKS



**FIGURE 8A:
TEMPERATURE**



**FIGURE 8B:
PRECIPITATION**

1 = Coldest/Driest
103 = Warmest/Wettest

National Climatic Data Center, NOAA

Temperature and Precipitation Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1997. States having a rank of top ten coldest or driest (rank 1-10) or top ten warmest or wettest (rank 94-103) are shaded.

Figure 7A shows, in illustrative map form, the October 1997 temperature rankings for the 48 contiguous states. No state was within the top ten cool portion of the historical distribution while nine were within the cool third of the historical distribution. No state ranked within the top ten warm portion of the historical distribution while four ranked within the warm third of the distribution.

October 1997 state ranks for precipitation are shown in **Figure 7B**. Two states ranked within the top ten wet portion of the distribution while thirteen others ranked within the wet third portion of the distribution. One state ranked within the top ten dry portion of the historical distribution while fourteen others ranked within the dry third. ***It should be noted that these October state precipitation ranks are preliminary and should be used with considerable caution due to the high variability of precipitation on a small space and time scale.***

Year-to-date statewide temperature and precipitation ranks are shown in **Figures 8A and 8B**. Two states ranked within the top ten warm portion of the historical distribution while 11 others ranked within the warm third of the distribution. No state was within the top ten cool while thirteen ranked within the cool third of the distribution. Five states had their tenth driest or drier January-October period while thirteen others ranked within the dry third portion of the distribution. Only one state was within the top ten wet portion of the distribution for the ten-month period while fourteen others ranked within the wet third of the historical distribution for the January-October period.

It should be emphasized that all of the temperature and precipitation ranks on these maps and in Table 1 are based on preliminary data. The ranks will change when the final data are processed.

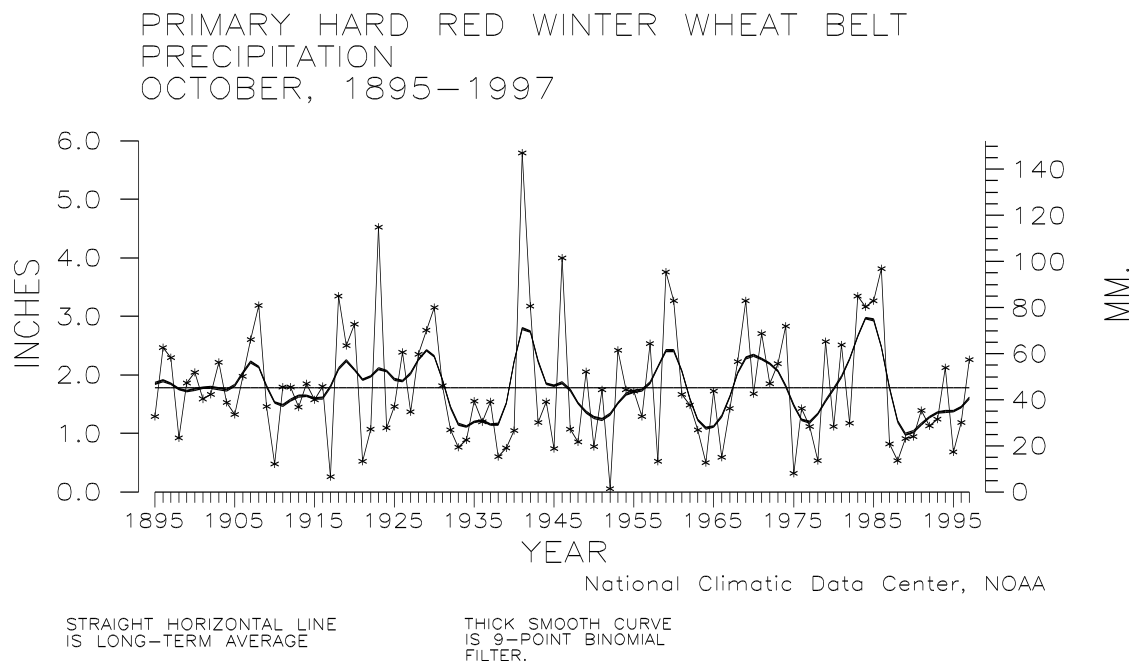


Figure 9: Preliminary data indicate that precipitation averaged across the Primary Hard Red Winter Wheat agricultural belt began the growing season on a positive note. This area includes the Texas panhandle, western Oklahoma, most of Kansas, southern and western Nebraska, and extreme eastern Colorado. The season runs through March.

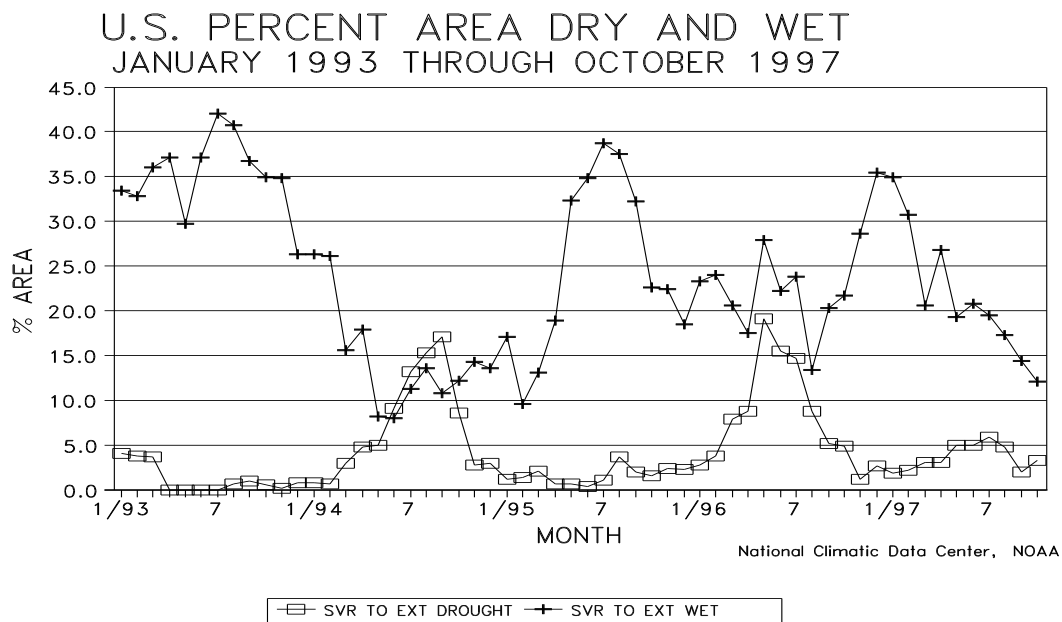


Figure 10: Long term drought coverage (as measured by the Palmer Drought Index) remained relatively low with October 1997 having slightly more than three percent of the country in severe to extreme drought. Twelve percent of the country experienced severe to extreme wetness during October. The core dry areas included portions of the Southwest and mid-Atlantic while core wet areas included much of the Pacific Northwest, Northern Rockies, South Dakota, and portions of the lower Mississippi valley and southern plains.

NORTHEAST REGION PRECIPITATION OCTOBER, 1895–1997

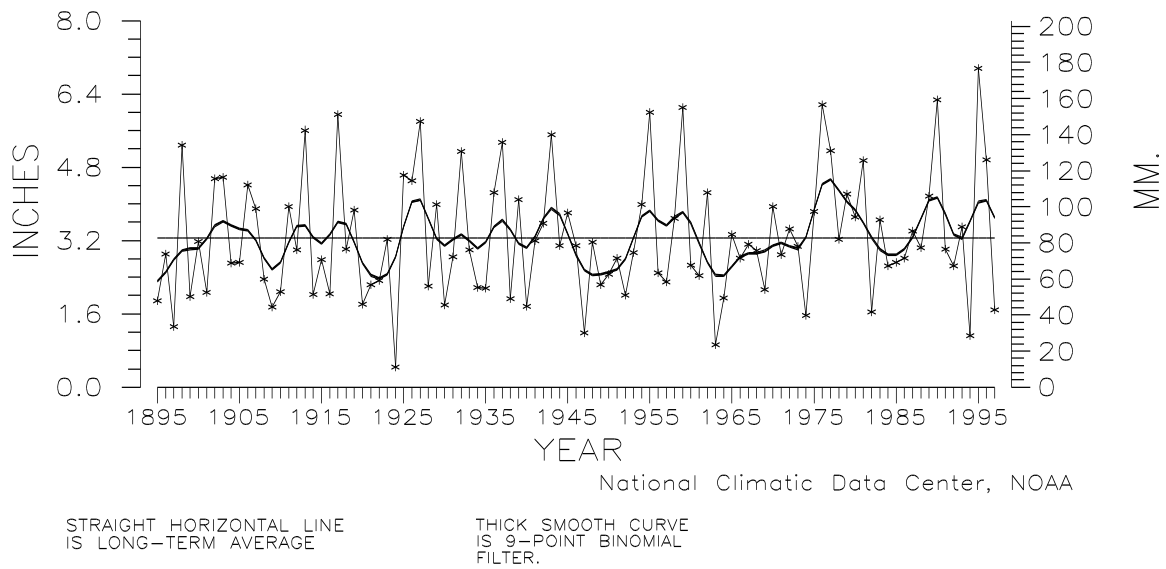


Figure 11: Preliminary data ranked October 1997 as the eighth driest such month on record for the Northeast Region. The Northeast Region includes all states from Maryland and Pennsylvania, northward.

NORTHWEST REGION PRECIPITATION OCTOBER, 1895–1997

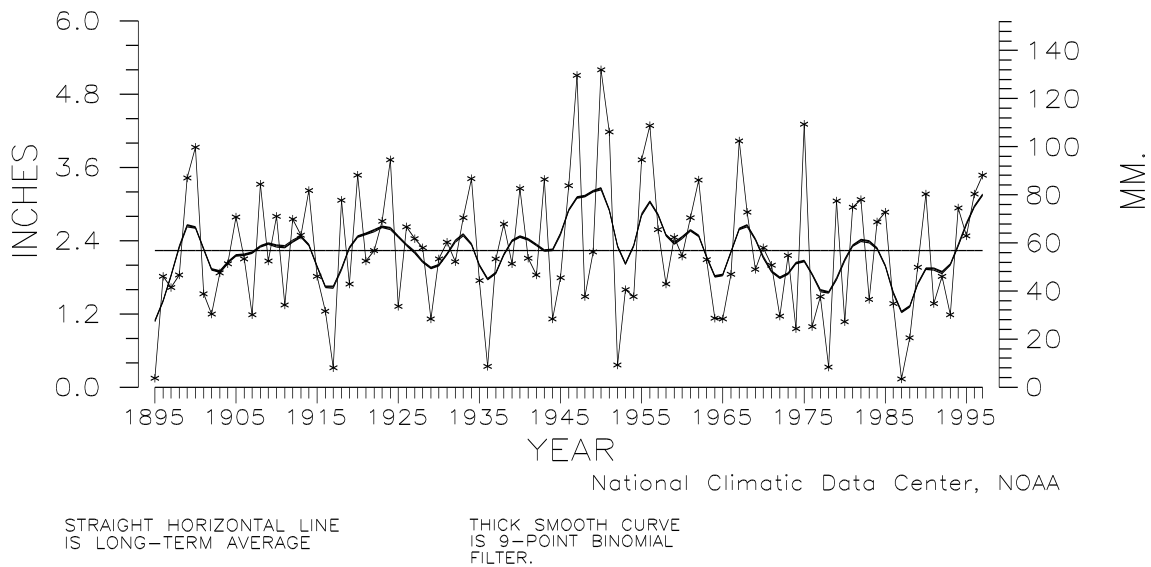


Figure 12: Preliminary data ranked October 1997 as the eleventh wettest such month on record for the Northwest Region. The Northwest Region includes Idaho, Oregon, and Washington.

SNOW COVER ANOMALY OCT. 1997

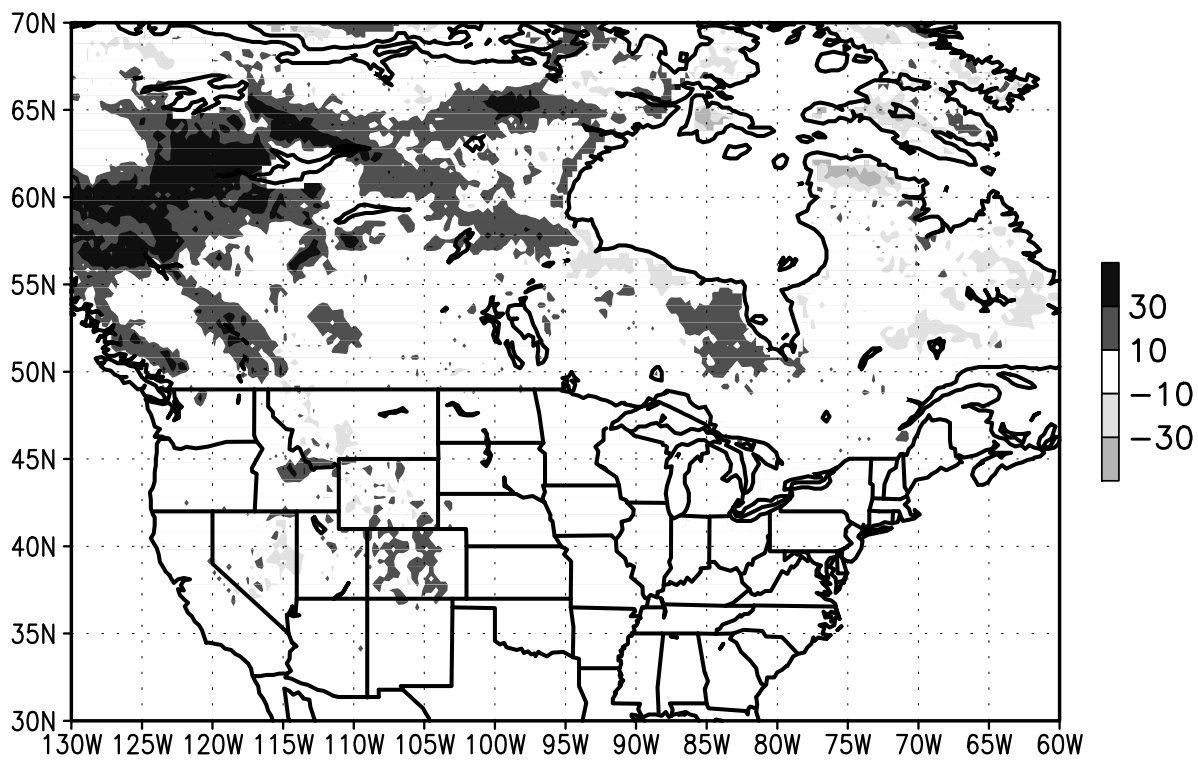


Figure 13

SURFACE WETNESS ANOMALY OCT 1997

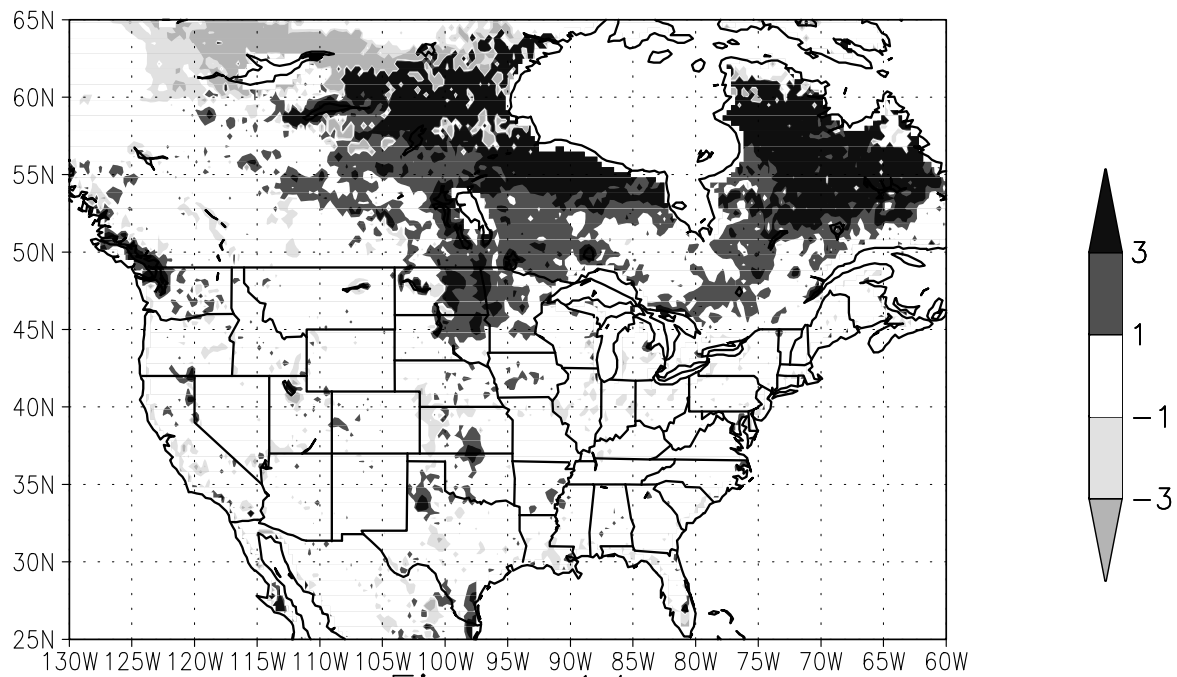


Figure 14

Figure 13 shows mean monthly snow cover anomalies for the month of October. Values represent the deviation from average (base period 1992-1996) snow cover and the anomaly is denoted as a percentage difference from that monthly average. This product is derived from the Special Sensor microwave Imager (SSM/I), an instrument flown on a polar orbiting satellite of the defense meteorological satellite program. Snow cover greater than the base period average was observed over parts of the central Rocky mountains of the U.S. Most of western and central Canada had coverage above the average, while the eastern third of Canada was below the average for the month.

Figure 14 shows the mean monthly surface wetness anomalies for the month of October. This experimental product observes water on the surface, and it is also derived from the SSM/I instrument. As water accumulates on the surface, the radiance at the longer wavelengths decreases relative to the radiance observed at the shorter wavelengths. This relationship (slope) is translated into a wetness index. Surface water does not necessarily reflect the amount of moisture in the soil, instead this index illustrates the magnitude of liquid water on top of the ground, or in the vegetation. The wetness signature can be attributed to recent rain, melting snow, lakes, rivers, or irrigation. During October excessive surface wetness was observed over the northern plains of the U.S., as well as central and eastern Canada. There were also scattered areas of above normal wetness over the central and southern plains of the U.S. Negative anomalies of wetness occurred over north-central Canada, where snow covered the surface earlier than usual.

NORTHERN PLAINS AND GREAT LAKES AREA PERCENT AREA VERY WARM

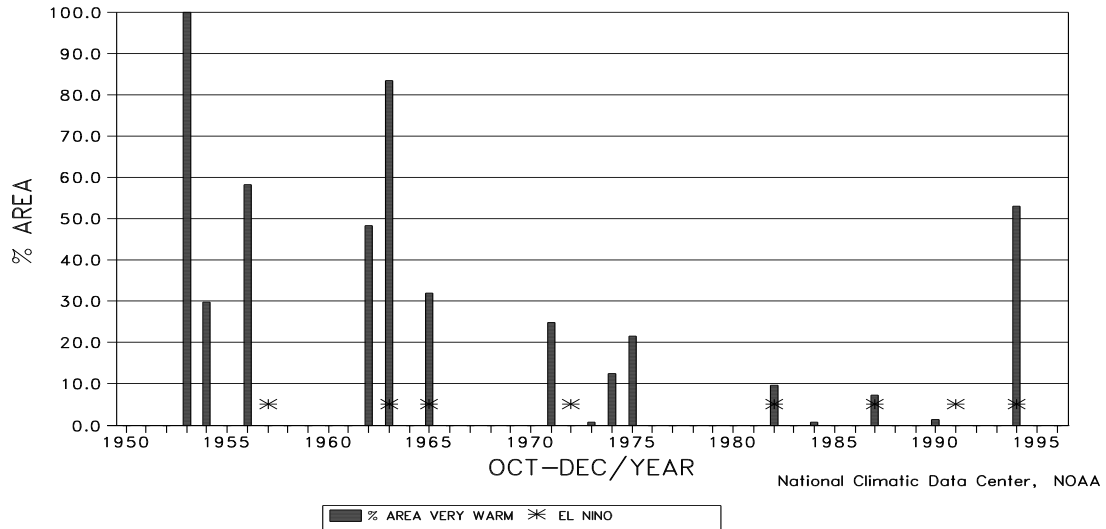


Figure 15: Research has shown that the Northern Plains and Great Lakes area has a tendency for above normal temperatures during an El Niño event. Six of the last eight significant events (denoted with an asterisk) do show the presence of extremely warm temperature anomalies (top ten percent for the period of record) during the October-December phase; however, significant warm events have occurred during non-El Niño years as well.

NORTHERN PLAINS AND GREAT LAKES AREA PERCENT AREA VERY COLD

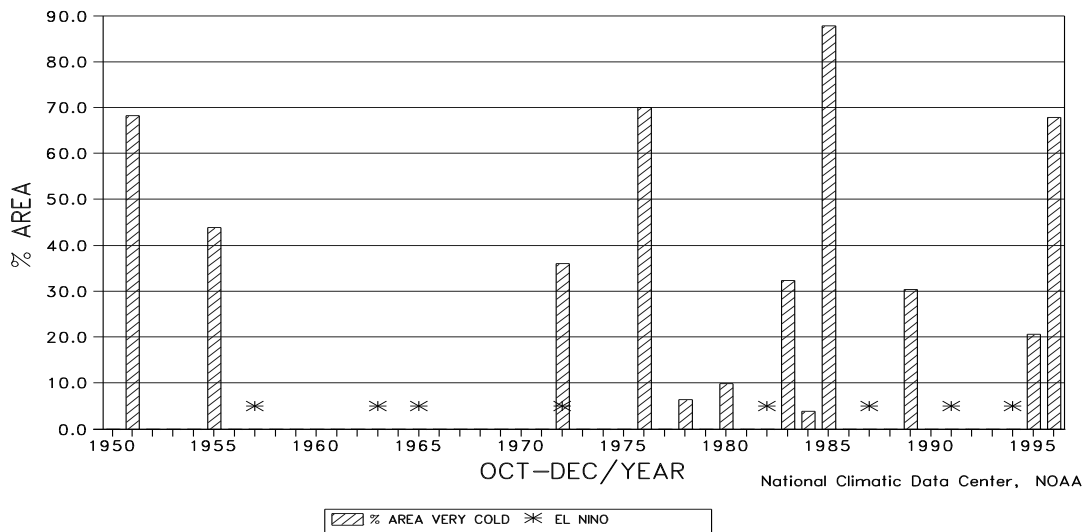


Figure 16: Perhaps more noteworthy than the presence of extreme warmth during an El Niño year for the Northern Plains and Great Lakes area, is the absence of extreme cold. In the last eight events only one has noted extreme cold (top ten percent cold) temperatures during the October-December phase.

D J F

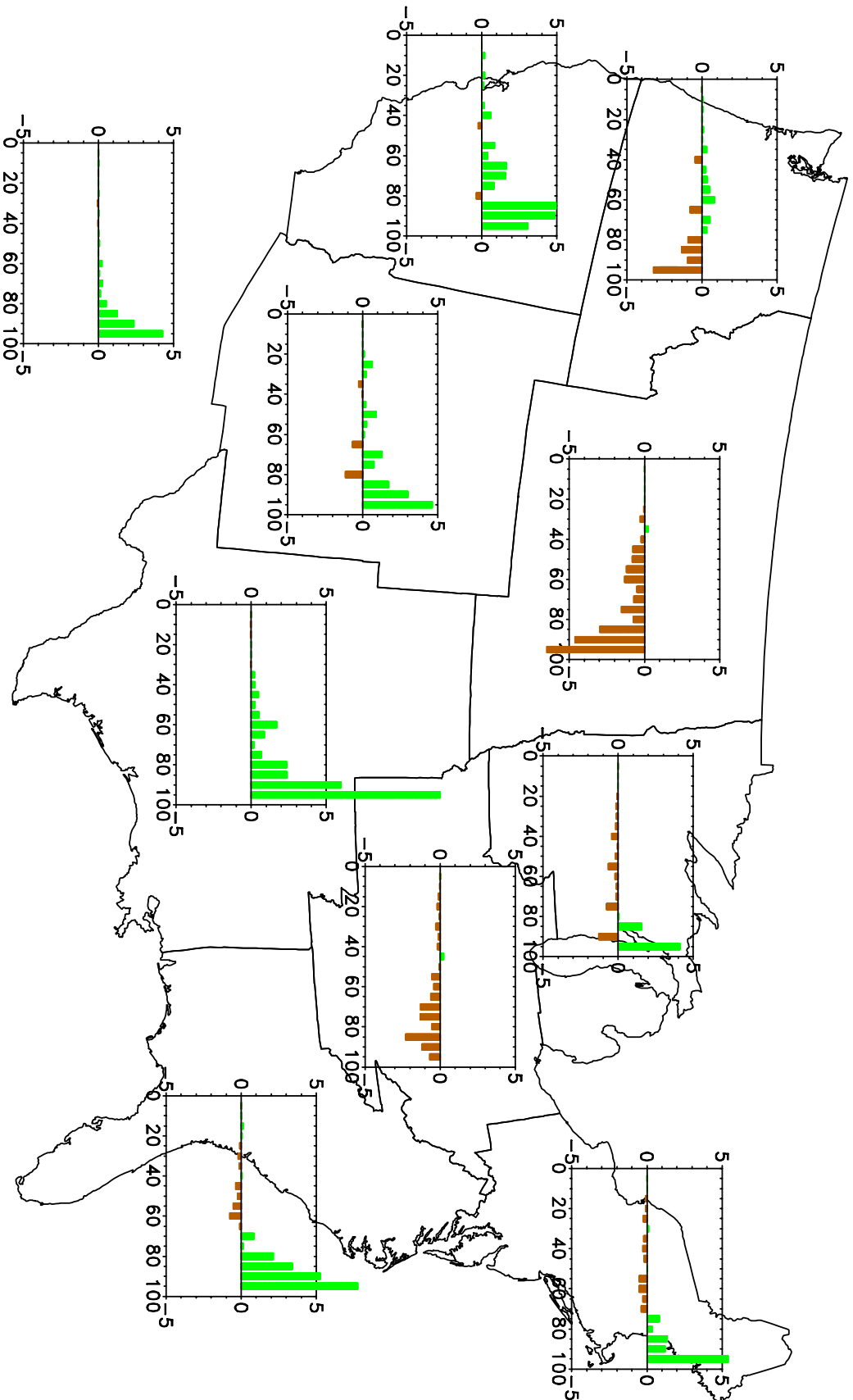
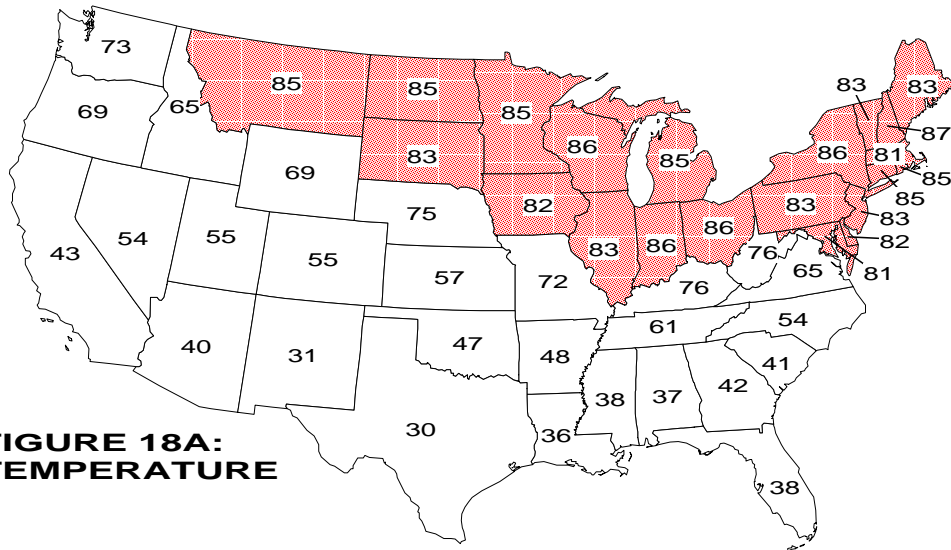
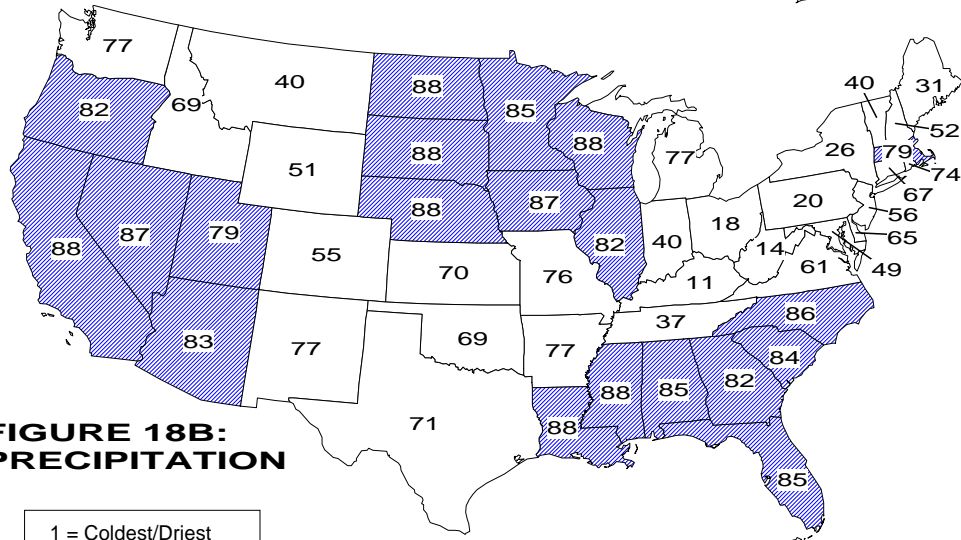


Figure 17

October 1982-March 1983



**FIGURE 18A:
TEMPERATURE**



**FIGURE 18B:
PRECIPITATION**

1 = Coldest/Driest
88 = Warmest/Wettest

National Climatic Data Center, NOAA

Temperature and Precipitation Ranks for the contiguous United States. Each state is ranked based on its data from 1895-1983. States having a rank of top ten coldest or driest (rank 1-10) or top ten warmest or wettest (rank 79-88) are shaded.

Figure 17 shows the average impact of El Ninos on daily precipitation rates using the strongest six events since 1950. The horizontal scale is a measure of the intensity of daily precipitation events (100 reflecting the strongest event). The vertical scale shows the percent change in precipitation of the El Nino years versus non-El Nino years. The chart for the South region of the United States shows an increase in precipitation for El Nino years and also shows that much of that increase is accounted for by heavier events. This is also true for the Southeast and Northeast regions but not to such a great extent. On the other hand, while the West-North Central states show a decrease in precipitation for the El Nino years, most of that decrease is also reflected in the heavier precipitation events. The contiguous United States is represented in the inset.

Figure 18A shows the temperature rankings for the contiguous United States for the period October 1982-March 1983. This period coincides with strongest El Nino event on record prior to the present episode. Based on 88 years of data, 1895-1983, October 1982-March 1983 was among the ten warmest such six-month periods for twenty-one states from Montana to Maine. Conversely, cooler than normal temperatures were observed for the southwest and the southeast.

Figure 18B shows the precipitation rankings for the contiguous United States for the October 1982-March 1983 El Nino event. Based on 88 years of data, 1895-1983, October 1982-March 1983 noted the wettest such six-month period on record for seven states and among the top ten wettest such periods on record for a total of twenty states in three distinct areas; the far-west, the southeast, and the northern plains.